Claims:

1. (currently amended) A process for operating a reformer system, the process comprising:

introducing ~~a gas mixture~~ to the reformer system a gas mixture comprising fuel and oxidant at a first gas mixture flow rate and a first oxidant:fuel ratio, and operating the reformer system at said first gas mixture flow rate and first oxidant:fuel ratio; and then

increasing ~~a proportion of an~~ the oxidant:fuel ratio ~~in the gas mixture~~ and ~~controlling a~~ reducing the gas mixture flow rate ~~of the gas mixture; and~~

~~reacting the gas mixture to form a reformate stream and~~

to increase a temperature in the reformer system, wherein the temperature is effective to remove a contaminant from the reformer system.

2. (original) The process according to Claim 1, ~~wherein controlling the flow rate of the gas mixture~~ further comprise~~s~~ing the steps of:

monitoring a reformer system temperature;

~~reducing the flow rate of the gas mixture when the temperature is greater than or equal to a first temperature;~~

~~flowing the oxidant into the reformer system when the temperature is less than or equal to a second temperature; and~~

reducing the flow rate of the oxidant when the temperature is greater than or equal to the first temperature; and

increasing the flow rate of the oxidant into the reformer system when the temperature is less than or equal to a second temperature, which second temperature is less than the first temperature.

3. (canceled)

4. (original) The process according to Claim 1, wherein the oxidant is selected from the group consisting of air, water, carbon dioxide, and combinations comprising at least one of the foregoing oxidants.

5. (original) The process according to Claim 1, wherein the contaminant comprises carbonaceous material.

6. (currently amended) The process according to Claim 1, wherein increasing ~~a proportion of an~~ the oxidant:fuel ratio in the gas mixture and ~~controlling a~~ reducing the flow rate of the gas mixture produces a peak operating temperature in the reformer system at a distance of less than about 10 millimeters from an inlet of a reformer zone.

7. (currently amended) The process according to Claim 1, wherein increasing ~~a proportion of an~~ the oxidant:fuel ratio in the gas mixture and ~~controlling a~~ reducing the flow rate of the gas mixture produces a peak operating temperature in the reformer system at a distance of less than about 7 millimeters from an inlet of a reformer zone.

8. (currently amended) The process according to Claim 1, wherein increasing ~~a proportion of an~~ the oxidant:fuel ratio in the gas mixture and ~~controlling a~~ reducing the flow rate of the gas mixture produces a peak operating temperature in the reformer system at a distance of less than about 5 millimeters from an inlet of a reformer zone.

9. (canceled)

10. (original) The process according to Claim 2, wherein reducing the flow rate of the oxidant comprises reducing the flow rate to zero.

11. (currently amended) The process according to Claim 2, further comprising repeat~~ingedly~~ steps of increasing the flow~~ing~~ rate of the oxidant into the reformer system and then reducing the flow of the oxidant until greater than or equal to about 80 percent of the contaminants present within the reformer system are removed.

12. (original) The process according to Claim 2, ~~wherein controlling~~ further comprising repeated steps of increasing the flow rate of ~~the gas mixture further comprises repeating flowing~~ the oxidant into the reformer system and then reducing the flow of the oxidant until the temperature is at a third temperature that remains at or below the second temperature.

13. (original) The process according to Claim 2, wherein monitoring the temperature comprises modeling a temperature profile using parameters selected from the group comprising a predetermined flow rate of the gas mixture, a measured flow rate of the gas mixture, an inlet temperature of the gas mixture prior to reacting the gas mixture to form a reformate stream, an estimate of an exit temperature, thermal losses from operating the reformer system, and combinations comprising at least one of the foregoing parameters.

14. (original) The process according to Claim 2, wherein the first temperature is less than or equal to about 1,000°C.

15. (original) The process according to Claim 6, wherein the peak operating temperature is at about 800°C to about 1,000°C.

16. (original) The process according to Claim 12, further comprising shutting down the reformer system when the temperature remains at or below the third temperature.

17. (original) The process according to Claim 12, wherein, for each successive step of increasing the flow rate of oxidant into the reformer system, ~~repeating flowing the oxidant into the reformer system comprises sequentially increasing~~ the flow rate of the oxidant into the reformer system is higher than the flow rate of oxidant for each previous step of increasing the oxidant flow rate.

18. (original) The process according to Claim 12, wherein repeating flowing the oxidant into the reformer system and reducing the flow of the oxidant forms a periodic flow pattern.

19. (previously presented) A process for operating a reformer system, the process comprising:

introducing a gas mixture to the reformer system and

contacting an oxidant in the gas mixture with a catalyst material disposed at an inlet to the reformer system to generate a reformate stream and to

increase a temperature in the reformer system, wherein the temperature is effective to remove a contaminant from the reformer system;

monitoring an operating temperature of the reformer system;

increasing a proportion of the oxidant in the gas mixture and controlling a flow rate of the gas mixture to produce a peak operating temperature in the reformer system at a distance of less than or equal to about 10 millimeters from the inlet;

reducing the flow rate of a fuel in the gas mixture to zero and flowing the oxidant into the reformer system when the operating temperature is less than or equal to a first temperature; and

reducing the flow of the oxidant to zero when the operating temperature is greater than or equal to a second temperature, wherein the second temperature is greater than the first temperature.

20. (original) The process according to Claim 19, wherein the distance is less than or equal to about 7 millimeters.

21. (original) The process according to Claim 19, wherein the distance is less than or equal to about 5 millimeters.

22. (previously presented) A process for operating a reformer system, the process comprising:

monitoring an operating temperature of the reformer system;

reducing a flow of a fuel in a gas mixture into the reformer system to zero when the operating temperature of the reformer system is greater than or equal to a first temperature;

flowing an oxidant into the reformer system when the operating temperature of the reformer system is less than or equal to a second temperature;

reducing the flow of the oxidant when the operating temperature is greater than or equal to the first temperature;

repeating flowing the oxidant into the reformer system and reducing the flow of the oxidant to zero until the operating temperature is at a third temperature that remains at or below the first temperature; and

shutting down the reformer system when the operating temperature remains at or below the third temperature.

23. (original) The process according to Claim 22, wherein reducing the flow rate of the gas mixture comprises reducing the flow rate to zero.

24. (original) The process according to Claim 22, wherein reducing the flow rate of the oxidant comprises reducing the flow rate to zero.

25. (previously presented) The process according to Claim 1, wherein the operating temperature is about 50°C to about 150°C greater than a normal operating temperature.

26. (previously presented) The process according to Claim 25, wherein the normal operating temperature is about 750°C to about 950°C.

27. (new) The process according to Claim 12, wherein reducing the flow rate of the oxidant comprises reducing the flow rate to zero.

28. (new) The process according to Claim 13, wherein reducing the flow rate of the oxidant comprises reducing the flow rate to zero.

29. (new) The process according to Claim 13, wherein, for each successive step of increasing the flow rate of oxidant into the reformer system, the flow rate of the oxidant into the reformer system is higher than the flow rate of oxidant for each previous step of increasing the oxidant flow rate.